



## AMSAT-UK 2metre SATELLITE MAST HEAD PRE-AMP MODULE

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### INTRODUCTION

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This module has been designed to provide sufficient gain to make up feeder losses of up to 10dB together with a low noise figure, and good out of band rejection of unwanted signals.

Unlike most pre-amps, which have excessively high gain and little filtering this module will help to prevent intermodulation in following receivers.

The pre-amp. has been designed to mount at the aerial in a suitable weather proof box and can be powered directly or via the aerial feeder from a receiver with voltage feed facilities to the receiver aerial input.

### SPECIFICATION

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POWER REQUIREMENTS :- 10.5 to 14 volts D.C. at 15 mA max.

NOISE FIGURE :- Typically 1dB

GAIN :- 12 dB  $\pm$ 1dB (Adjustable with the output attenuator up to 14 dB).

PASS BAND CHARACTERISTICS :- Substantially flat ( $\pm$  1 dB) between 145 and 146 MHz.

OUT OF BAND SELECTIVITY :- Typically -4dB<sub>r</sub> @ 147MHz, -12dB<sub>r</sub> @ 148 MHz  
- 20dB<sub>r</sub> @ 149 MHz.

-5dB<sub>r</sub> @ 144MHz, -15dB<sub>r</sub> @ 143 MHz  
-24dB<sub>r</sub> @ 142 MHz.

-50dB<sub>r</sub> @ 136 MHz and 158 MHz.

DIMENSIONS :-85 mm x 34 mm x 24 mm high.

This unit is supplied to AMSAT-UK as an assembled and tested module complete with mounting screws and pillars less box and R.F. connectors by :-

DARTCOM,

Postbridge,  
Yelverton,  
Devon,  
PL20 6SY.  
Tel.:- 0822 88253

## ASSEMBLY

The module should be housed in a suitable box which can be weather proofed to enable the pre-amp to be mounted at the aerial.

This box can be a purpose weather proof type such as one supplied by R.S. Components Pt. No. 501-840. This type of box tends to be expensive and we have found that good results can be obtained using a standard diecast box such as R.S. comp. Pt. No. 509-939 provided that it is wrapped well with DENZO tape.

The box we recommend is an A.B.S. type with an internal nickle acrylic coating. This box provides R.F. shielding, a medium which is easy to drill and cut together with a low weight and cost factor. The R.S. Pt No. for this is:- 501-553. This box should also be water proofed using DENZO tape or similar.

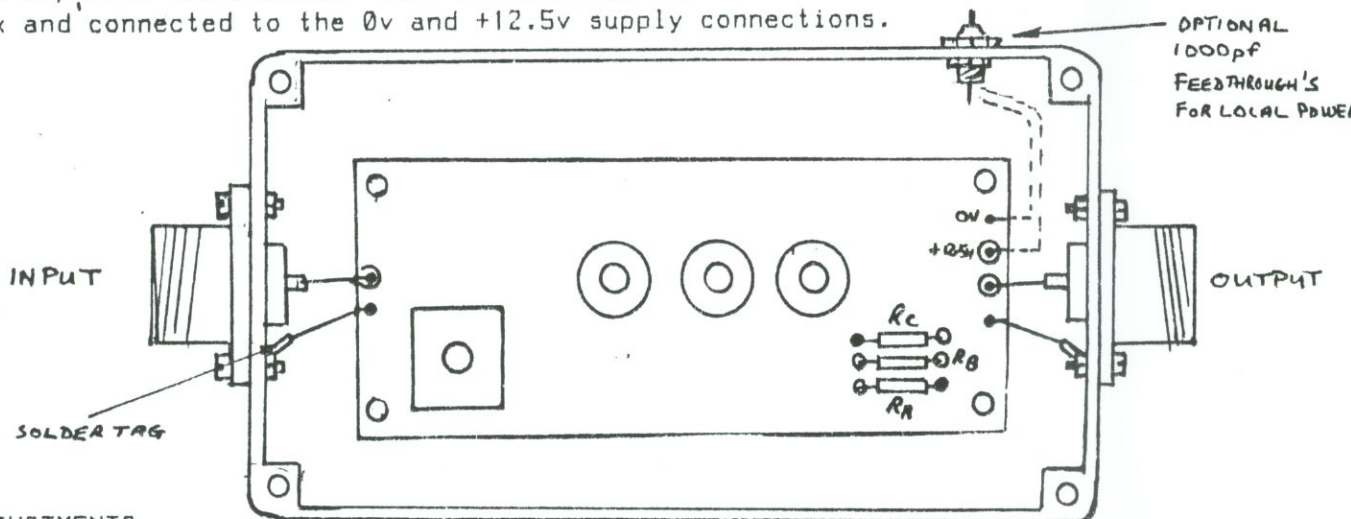
Pillars, screws and nuts are provided to mount the pre-amp module. **PLEASE NOTE THAT IT IS IMPORTANT NOT TO MOUNT THE MODULE ANY CLOSER THAN THE PILLAR SIZE PROVIDED AS THIS WILL AFFECT THE ALIGNMENT OF THE MODULE.**

Practical tests with both R.S. boxes 509-939 and 501-553 have shown that the module alignment is not significantly affected when the lid is fixed in place.

The input/output connectors can be S0259 type but "N" type are preferred for their superior performance.

The R.F. input/output pins on the module should be connected to the sockets with 18 s.w.g. wire provided that the length of these leads is less than 1 inch. If this is exceeded then short lengths of 50 ohm coax should be used.

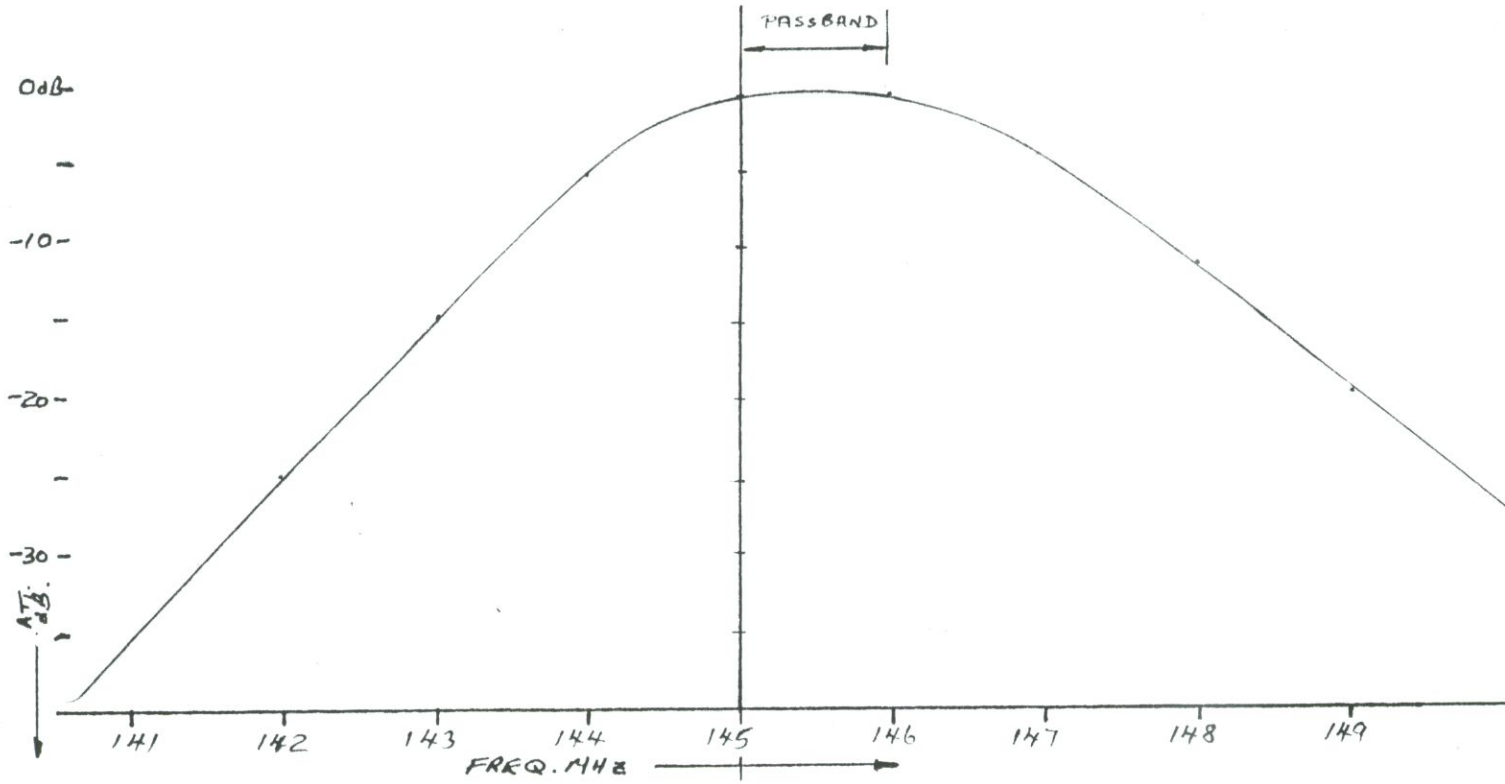
If the unit is not to be powered by a D.C. supply up the feed line to the pre-amp from the receiver then feedthrough capacitors should be fixed to the box and connected to the 0v and +12.5v supply connections.



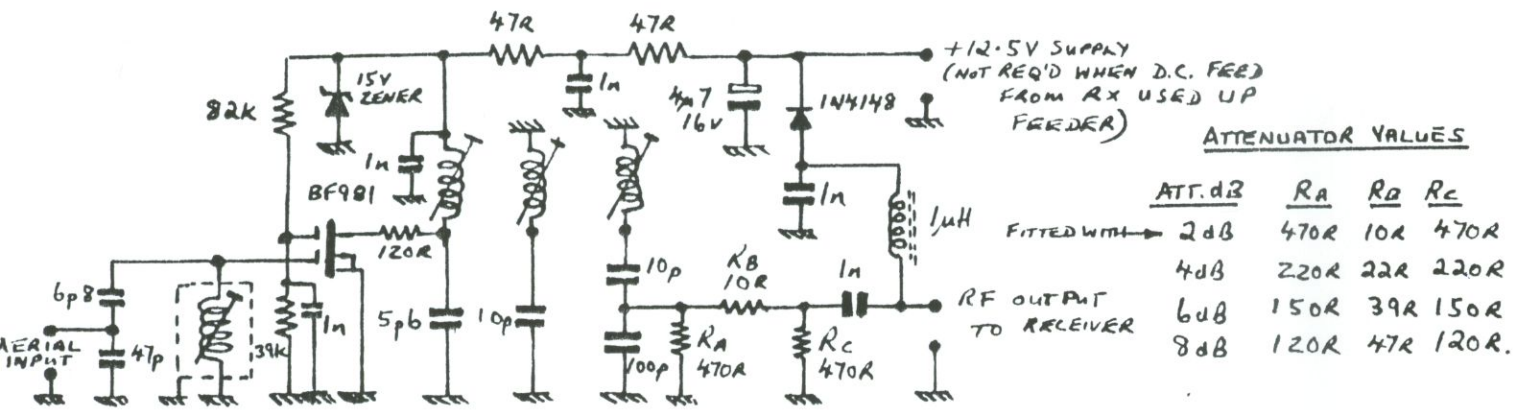
## ADJUSTMENTS

The unit has been fully tested and set up for optimum performance. **NO ADJUSTMENTS SHOULD BE ATTEMPTED UNLESS YOU HAVE ACCESS TO A SWEEP GENERATOR AND X-Y DISPLAY.**

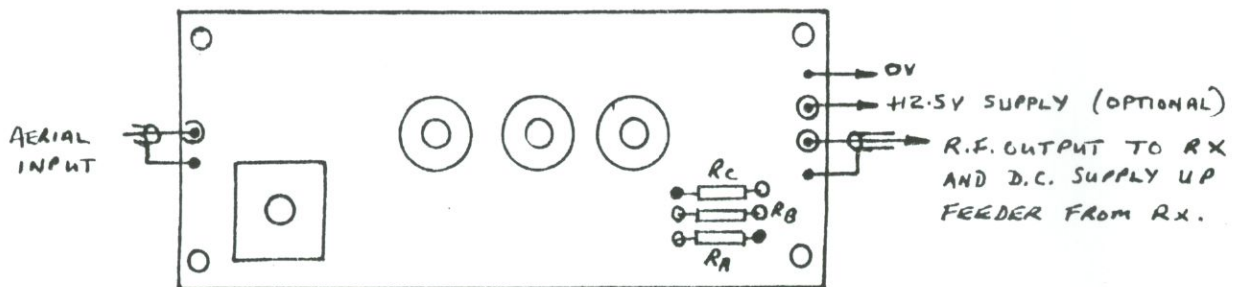
The output attenuator can be adjusted to obtain more or less gain by changing the resistors shown on the accompanying drawings.



TYPICAL RESPONSE CURVE OF 145-146 MHz PRE-AMP.



SCHMATIC DIAGRAM OF 145 TO 146 MHz PRE-AMP.



MODULE CONNECTION DETAILS